REMARKS/ARGUMENTS

Reconsideration and continued examination of the above-identified application are respectfully requested.

Claims 1-14 are pending in the application. Claims 1 and 3-14 stand rejected under 35 U.S.C. § 103(a). Claim 2 has been objected to, but has been indicated to cover allowable subject matter.

At page 2 of the Office Action, the Examiner rejects claims 1, 3, and 5-14 under 35 U.S.C. § 103(a) as unpatentable over Reichert et al. (US 6,193,779). At page 3 of the Office Action, the Examiner also rejects claim 4 under Reichert et al. The Examiner states that Reichert et al. shows a method of forming a nitrided valve metal by providing a tantalum powder; doping the tantalum powder at temperatures as low as 650 °C; deoxidizing the powder; and sintering at 1500-1300 °C. The Examiner acknowledges that Reichert et al. does not provide any specific examples of nitriding prior to deoxidation. For the following reasons, this rejection is respectfully traversed.

Reichert et al. relates to tantalum powders with particular grain sizes, that are allegedly useful in capacitors. Reichert et al. also describes the option of nitrogen and phosphorous doping of the powders. See col. 3, lines 50-63 of Reichert et al. Reichert et al. also states that the nitrogen content of the powders can range from 100 to 15,000 ppm and is preferably at least 500 ppm. As explained in detail below, Reichert et al. only shows nitriding during deoxidation, not earlier. The difference between deoxidation and a separate heat treatment step are clearly understood by those skilled in the art. See also page 4, lines 22-35 of the present application. And, then see page 6, lines 12-20 of the present application. Deoxidation is clearly different from a prior heat treatment step.

Claim 1 of the present application recites a process of preparing a nitrided valve metal,

which involves nitriding "during a heat treatment that is prior to a deoxidation step." The advantages and benefits of nitriding during heat treatment prior to the deoxidation step are many, and are extensively discussed in the present application. For example, the method preferably provides a more uniform distribution of nitrogen throughout the valve metal. See page 2, lines 5-6 of the present application. The present invention also provides a nitrided valve metal having high capacitance capability, along with excellent flow properties and/or Scott Density. See page 2, lines 9-11 of the present application.

The present application at page 6, lines 24-33 explains:

> The nitriding of the valve metal during the heat treatment step is beneficial compared to other nitriding methods which typically occur during the deoxidation step. By nitriding during the heat treatment stage, a more uniform distribution of the nitrogen throughout the entire valve metal powder is achieved. One reason this occurs may be due to the fact that the nitriding occurs at an early stage of the metal processing and thereafter there are many other stages which involve subjecting the valve metal to high temperatures. These additional stages assist in uniformly distributing the nitrogen. Thus, the earlier the nitriding can occur, the more uniform distribution of the nitrogen throughout the valve metal can be achieved. In the examples, as can be seen, uniform nitrogen distribution was accomplished.

Thus, the benefits of nitriding at this particular stage, as recited in claim 1, which is absent from the cited art, are numerous and well disclosed in applicant's specification.

Reichert et al. does not teach or suggest nitriding prior to deoxidation. In fact, Reichert et al. states that "the nitrogen content is preferably adjusted to values of 100-15,000 ppm, which can be achieved in particular by adding ammonia during deoxidation." (Emphasis added). See col. 4, lines 42-45 of Reichert et al. The Examiner has not provided a suggestion or motivation to modify the processes set forth in Reichert et al.

Where it is necessary to modify a single reference in an obviousness rejection, the Examiner is required to set forth in the Office Action "an explanation why one of ordinary skill in the art at the time the invention was made would have been motivated to make the proposed modification." MPEP § 706.02(j). "[T]he examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." (emphasis supplied.) MPEP § 706.02(j).

It is respectfully submitted that the Examiner has not provided any suggestion or motivation to modify Reichert et al. in the manner proposed in the Office Action. Indeed, the only stated advantages and benefits to modifying Reichert et al. in the manner proposed that are in the record, are contained in the applicant's own disclosure. This is clearly improper. "The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure." MPEP § 706.02(j).

Further, the nitriding temperature range of claim 9 is from about 250 °C to about 600 °C. The Examiner, at page 3, states that this nitriding temperature range approximates that set forth by Reichert et al. Reichert et al. does not appear to give much guidance with respect to a specific temperature range for nitriding. Reichert et al. does state that doping "can be achieved in particular by adding ammonia during deoxidation." See col. 4, lines 43-44 of Reichert et al. This implies a very high temperature range of "650 °C to 900 °C, preferably 750 °C to 850 °C." See col. 4, lines 28-30 of Reichert et al.

On the other hand, the present application contains an extensive discussion of the benefits of the temperature range of claim 9. See page 5, lines 14-28 of the present application. Therein it is

pointed out that nitriding, in at least one embodiment, preferably does not occur at temperatures greater than about 600 °C. See page 5, line 16-17 of the present application, which goes on to explain at page 6, lines 5-8:

> It is preferred that the nitrogen gas or other nitrogen generating techniques do not occur at temperatures above 600° C because the combination of nitrogen with tantalum is an exothermic reaction which generates heat and leads to an autocatalytic process which can be uncontrollable. This reaction leads to a non-uniformed distribution of the nitrogen in the basic lot powder.

The nitriding temperature range of 650 °C to 900 °C that is implied in Reichert et al. is clearly outside the range of claim 9. Thus, the temperature range of claim 9 is not taught or suggested in Reichert et al. Given the absence of any substantive discussion regarding nitriding temperature ranges in Reichert et al. in the first place, and given the extensive discussion of the benefits of the range cited in claim 9 of the present application, it is respectfully suggested that claim 9 is clearly allowable.

Claim 4 has been rejected under 35 U.S.C. § 103(a) as unpatentable over Reichert et al. (US 6,193,779). The Examiner states that Reichert et al. does not teach doping after sintering, but that it is common knowledge in the art to dope before or after sintering in order to allow reaction products to escape during the sintering step.

Claim 4 includes the limitation that the nitriding occurs after a sintering phase of the heat treatment of the valve metal. The present application explains: "since the nitriding is preferably occurring at temperatures not above 600° C, it is preferred to conduct the nitriding where these temperatures are achievable, meaning, nitriding right before the sintering phase of heat treatment occurring at 1250° C - 1500° C or after this high temperature phase has occurred." See page 5, lines

15-19 of the present application.

Thus, as explained in the present application, the benefits of nitriding after a sintering phase are to nitride within the preferred temperature range disclosed in the application, which preferably gives all of the benefits discussed above for the 250 °C to 600 °C nitriding temperature range. It is respectfully submitted that nitriding as claimed in claim 1, after the sintering phase of the heat treatment, are not commonly known in the art.

The limitations of claim 4 are nowhere present or suggested in the cited art, or in the common knowledge of the art, and that claim 4 should be found allowable. It is respectfully requested that this rejection be withdrawn.

While the Applicants appreciate that claim 2 has been found to contain allowable subject matter, it is respectfully submitted that in view of the above arguments independent claim 1 is allowable, and that all of its dependent claims are allowable as well.

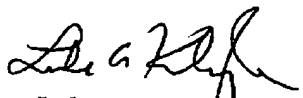
The Examiner is encouraged to contact the undersigned should there be any remaining claims as to the patentability of the presently-claimed subject matter.

CONCLUSION

In view of the foregoing remarks, the applicants respectfully request the reconsideration of this application and the timely allowance of the pending claims.

If there are any other fees due in connection with the filing of this response, please charge the fees to Deposit Account No. 03-0060. If a fee is required for an extension of time under 37 C.F.R. §1.136 not accounted for above, such extension is requested and should also be charged to said Deposit Account.

Respectfully submitted,



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